



MAGAZINE

PRICE TWOPENCE

AUGUST 1953



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FRONT COVER: *Sea Bathing*. Photograph by R. A. Hudson (Research Dept., Plastics Division).

OUR CONTRIBUTORS

P. C. ALLEN is the Director responsible for the 'Terylene' Council and also group director for Paints, Plastics and Leathercloth Divisions. His interests are many and varied—golf, cricket, foreign travel, foreign stamps and, above all, railways: in fact he once published a monograph on the railways of the Isle of Wight.

ALEX JARDINE is a well-known fisherman who advises the Company on 'Luron.' He is also an artist; and the last work of that famous chalk stream fly-fisherman G. E. M. Skues, called Itchin Memories, is illustrated by him. The fish he is proudest of is a 40 lb. salmon caught in Norway. He played it for two hours.

A. E. WARD is 86 years old this month. He entered the Middlesbrough salt trade in 1886—in the days when there were no typewriters or telephones. Working his way up, he eventually became a member of the board of directors of the Salt Union and a delegate director of I.C.I. Salt Division. He retired during the last war after 53 years in salt.

RAYON TO 'TERYLENE'

Fifty years' growth of man-made fibres

By P. C. Allen (Director responsible for 'Terylene' Council)

How big is the future of 'Terylene'? That is the question which so many people are asking. Here Mr. P. C. Allen reviews I.C.I.'s £15 million 'Terylene' plans against the background of the development of synthetic fibres since the turn of the century. His article is an extract from the talk he gave at the last meeting of Central Council.*

ABOUT 1900, experiments were starting on chemical derivatives of cellulose. Cellulose is not, I hope, a very terrifying word. It is the constituent of natural plant life. It is the woody part of wood and the treelike part of trees. Many natural forms of cellulose exist. Cotton is very nearly pure cellulose.

Chemical processes were devised in the early years of this century for extracting cellulose by making it soluble and tractable, and then recovering it by some process of regeneration or extrusion or coagulation into new and slightly different forms of fibre. That was the basis of the so-called rayon industry. The industry started with the possibly laudable idea of making artificial silk, silk being both very expensive and very desirable; but in fact nothing like silk was produced, and it was fairly early recognised that artificial silk perhaps was not really a very good idea.

I think that once the rayon industry got away from the idea of artificial silk and started calling the product rayon, which was about 1930, then it really began to be seen that a new form of fibre was emerging with novel, interesting and desirable properties of its own. One of them was cheapness. The industry began to grow—getting rid of extreme lustre, getting rid of the lack of strength, and getting rid of the problems connected with the enormously long lengths of continuous rayon by cutting up into staples.

Once it was suitable for use on existing machinery made

* Since going to press, plans have been announced for doubling the size of the Wilton 'Terylene' plant.

for cotton or linen, the new product began to be very widely used. This diversification of rayon and the cheapness associated with its greater output have brought it to this remarkable point, that the rayon staple, i.e. rayon cut up into lengths of two, three or four inches, is the cheapest fibre available today—now cheaper than cotton. It can be used on cotton or linen machinery; and it is beginning to be a large-tonnage product.

For example, in 1951 we consumed in this country about 500,000 tons of cotton, about 250,000 tons of wool and about 170,000 tons of rayon—rather under half of it in the form of cut or staple lengths. Something which started in a small way about 1905–10 to replace silk has ended up as a large-tonnage, cheap product which does not replace anything but which has its own place—a new fibre in its own right. Probably all of you are wearing some rayon on you today, although you may not know it.

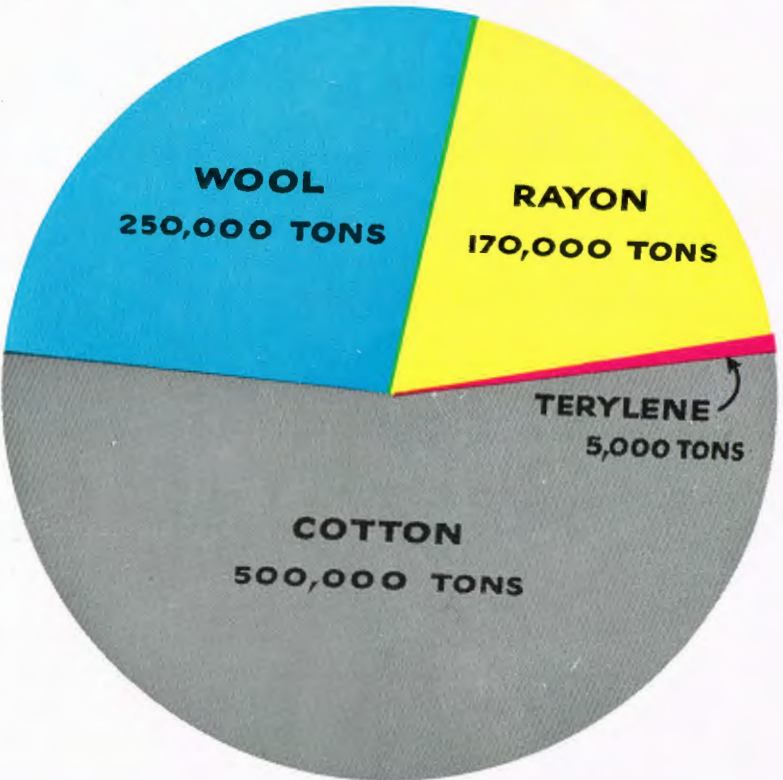
I.C.I. do not make rayon, but the rayon industry (which is a huge consumer of chemicals) is one of our largest customers. Our own interest in the fibre field is a good deal more recent than that.

In the last twenty-five years all over the world, not only here but in Germany and the United States as well, there has been a very great interest in scientific laboratories and elsewhere in the chemistry of large molecules, or what is known as

polymer chemistry. I will try not to go further into that if I can avoid doing so. Very little was known about this science twenty-five years ago. A great deal has been learned in the interval. This work on large molecules, the chief basis of matter by chemical standards, has led to the plastics industry, which is now a large-tonnage industry all over the world, and it is beginning to give rise to the whole new industry of chemical fibres.

One branch of this subject is the chemistry of proteins. Proteins occur in living matter, in muscles, in flesh, in hair and places like that, and in many growing vegetable substances. Proteins occur very often in forms which will enable you to separate them by chemical means and then recover them in the form of long threads or filaments. That is the basis of our new I.C.I. wool-like protein fibre 'Ardil.' The protein selected as the most suitable for this job was that in groundnuts, monkey nuts, peanuts, or whatever you like to call them. You extract the protein by a chemical process, and you recover it in the form of fibre by spinning it through a number of small holes in a spinneret.

But there is another group of fibres which are wholly synthetic, where nothing is taken from nature. You do not extract something from a cellulose-bearing plant, a cellulose-bearing product or a material containing protein. You build up your large molecules from very simple constituents, which may be derived from oil, acetylene from carbide or some very simple organic raw material.



The planned output of the Wilton 'Terylene' plant shown in relation to the amount of cotton, wool and rayon used by British industry in 1951

The first of those, and still I suppose the most famous, was nylon. Nylon was invented in the United States at the end of the 'twenties and the beginning of the 'thirties by the Du Pont Company after a long, intensive and, I might say, extremely expensive period of research endeavour. It took on immediately because of the properties it had of great strength, the ability to make very, very fine and strong filaments, and the fact that it found an almost immediate and excellent commercial market in ladies' stockings.

Nylon's Rapid Growth

The growth of nylon when it came on the commercial market about 1939 was very rapid indeed. The total world production (which is considerably less than the world market) is about 170,000 tons. It sounds a lot of nylon. I think the amount of nylon in a pair of stockings is one-fifth of an ounce. However, the amount of nylon made is still very small compared with the world tonnages of the older-established textile raw materials. The figure I have for the world production of wool is a million tons a year, for cotton about eight times that, and for rayon about two million tons. Although nylon has come up very rapidly from nil to 170,000 tons in fourteen to fifteen years, it is still a long way behind these huge tonnages of the traditional products.

As well as nylon there are other new developments coming along in this field of chemical fibres. 'Terylene' is a name about which perhaps you have heard a good deal in I.C.I. recently. You may have heard of Dacron, its American equivalent (but based on the same British invention, I am glad to say) Orlon and others. I.C.I. is right in the centre of those great new developments.

To begin with, we are making nylon polymer, which is the product in the solid mass form, ultimately spun into nylon yarn. That may find its way into socks, the spinning being carried out by British Nylon Spinners, which is half I.C.I. and half the great rayon firm of Courtaulds.

Our next big venture is 'Terylene,' in which we ourselves are going to do the whole process—the chemical side and the spinning into the spun yarns. 'Terylene' is chemically entirely different from nylon; although in certain finished forms to the inexperienced eye—I am not pretending my eye is expert, but there are many expert ones—there are many points of similarity and no very great points of difference. It is not an I.C.I. invention, and so therefore I think I can name without impropriety the skill and chemical inventiveness of Whinfield, the inventor who discovered this material when he was employed by the Calico Printers' Association.

'Terylene' came to us in the test-tube stage because the C.P.A. did not think they had the resources to bring it

from this point to full-scale production. I am glad to say that Whinfield is very much in the picture; he is of immense value to us. The inventor's enthusiasm for a thing of this kind is a priceless thing to have, and we are very glad that he has come in with us.

It is, I think, important to know that this sort of work is extremely expensive, and only a firm of large resources not only in money but also in technical staff, technical skill, workshops, laboratories and skilled operators of all kinds can really take on a new venture of this kind. I will give you some figures which will show you the sort of money which has to be put into this before you begin to get anything out.

Du Pont in America spent six million dollars on nylon research and twenty-one million dollars on building plant before they sold a pound of commercial nylon. Exactly the same sort of figures have applied in the case of 'Terylene.' We have spent very nearly £3,000,000 on research and development to date. We have sold quite a lot of fibre, but not as a commercial product. We are building a plant at Wilton, as most of you know, which is going to make 5000 tons a year. That does not sound very much against 250,000 tons of wool or 500,000 tons of cotton, but it is costing us £11,000,000. Therefore we shall venture something like £14,000,000 to £15,000,000 before we have got a commercial plant producing for sale.

Big Canadian Venture

We have, within the last month, taken the decision to build a similar plant in Canada. As the Chairman has said, we do believe that there is an enormous future in Canada, and we are pledging our faith in that by putting up a plant the same size as that of Wilton, to produce 5000 tons a year. It is going to cost us twenty to twenty-five million dollars to do that. We have got a site for it at Kingston, Ontario. Construction is starting this month, and we hope that the Kingston plant will be finished perhaps within a year of completion of the Wilton plant.

We shall then have two first-class full-scale units working. I think you will agree that we have not been idle on this big new venture in fibres.

Perhaps you might like to know what we think these new substances are going to do for us. The first thing I would say—and I say it very emphatically—is that they are not substitutes. We are not trying to make artificial silk, artificial wool or artificial anything else. They are new products in their own right. They have new, interesting and valuable properties, whether you use them by themselves, or whether mixed with old and perhaps cheaper fibres to confer benefits on finished goods.

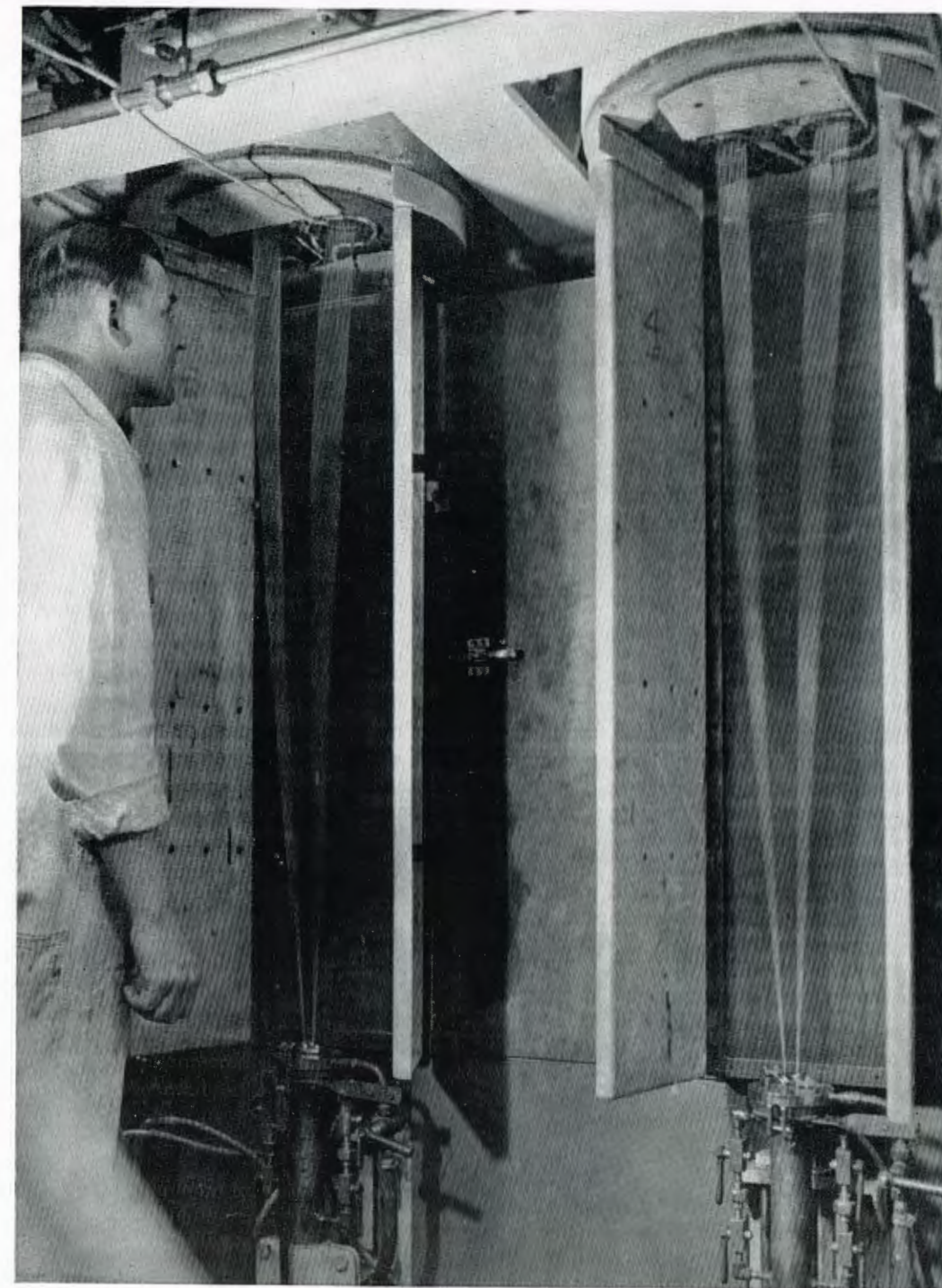
Take 'Terylene' for example. You can make and supply it in a long, continuous filament. You can make it in filaments

of 100 yards, or miles long if you like. You can have a very fine filament of very high strength with silk-like properties; or you can cut up the filament into staples three inches long and then combine those staples with the older traditional spinning processes, in which case you can get wool-like substances.

But you do get other things as well. You can get a dryness, a crispness in the fabric. It is warm to handle. You get great resistance to rubbing, abrasion and wear. You get very easy washing and very quick drying. You can wash out your underwear at night, and it is dry in the morning. I know that because I have done it a good many times when travelling around, and it really is dry the next morning. You do not have to iron it.

The crease resistance of this new fabric is really remarkable. You can, if you do it at a high enough temperature, impart a crease into a pair of trousers or into a skirt made from this new fabric and it will not come out. It is said (although I have never tried it) that you can take a hundred per cent 'Terylene' suit after wearing it all day, wash it in the bath at night and hang it up to dry, and in the morning the creases are still in the trousers. As I say, I have never done that myself, but I know people who have. I think the suit would have been better for a little ironing, but it was wearable.

Recently at their stand at Earls Court at the British Industries Fair I.C.I. was honoured by a visit by the Queen. There we had a very fine stand showing 'Ardil'



THE MOMENT WHEN 'TERYLENE' BECOMES A THREAD. The molten chemical, derived chiefly from oil, passes through the holes of a spinneret, and before it reaches the wind-up apparatus it has cooled and solidified into a continuous thread which is then drawn—in other words pulled and slightly twisted—to become 'Terylene' yarn.

and 'Terylene.' Her Majesty was taken round and the virtues of these new products were pointed out to her; at the end, very properly, she said, "You tell us of all these remarkable properties. Surely there must be some snags?" All we could think of to say was, "Well, they are still rather expensive, your Majesty." She said "I have no doubt the prices will come down." They may, and they should; and that is up to us—all of us.

DR. ALEXANDER FLECK

A PROFILE

reprinted from the "Observer" of 28th June

THIS week Dr. Alexander Fleck becomes the chairman of Imperial Chemical Industries Ltd. and the leading figure in what is undoubtedly one of the biggest industrial empires on earth.

It is typical of our time that Fleck himself is no capitalist. He brought nothing into the growing chemical industry except his brains, his character, and a university training in chemistry. More than likely he will not take even a modest fortune out of it.

It is a paradox of the so-called capitalist world in the mid-twentieth century that its giant industrial combines, the target of so much Socialist sniping of the 'thirties and the next top-favourite for Labour's nationalisation, should now offer virtually no scope for the "financier," that favourite figure of left-wing demonology. The ladder to success today in the great industrial combines is the ladder of technology, with its base fixed firmly not in the market-place but in the university laboratories. It is true that to climb it the technologist must show, long before middle age, an aptitude for industrial administration. But he must remain, first and foremost, a technologist.

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ON OTHER ladders—political, literary, legal, dramatic—the limelight of publicity shines occasionally on the promising young man. Before he reaches the top he is already widely known. But on the industrial ladders—and the more so the more scientific and technical they are—it is possible for a man like Dr. Fleck to arrive at the top at the mature age of 63 and for his name to mean little or nothing to the general public. In a country which depends so vitally on its industrialists this is a rather extraordinary state of affairs.

The amazing fact is that the future chairman of I.C.I. started his working life as a lab boy. Until he was 28 Fleck's career lay in Glasgow University and in pure scientific research. With little money and an education which had been interrupted at 14, he took the only way into the university open to him—as one of the boys who did the manual work, the sweeping and washing up, in the laboratories. His keenness to learn won him the opportunity after two years to attend classes as a full-time student. By very great determina-

tion he gained a chemistry degree at 22 and an appointment on the university's teaching staff. By 1913, at 24, he had his own research laboratory as Physical Chemist to the Glasgow and West of Scotland Radium Committee.

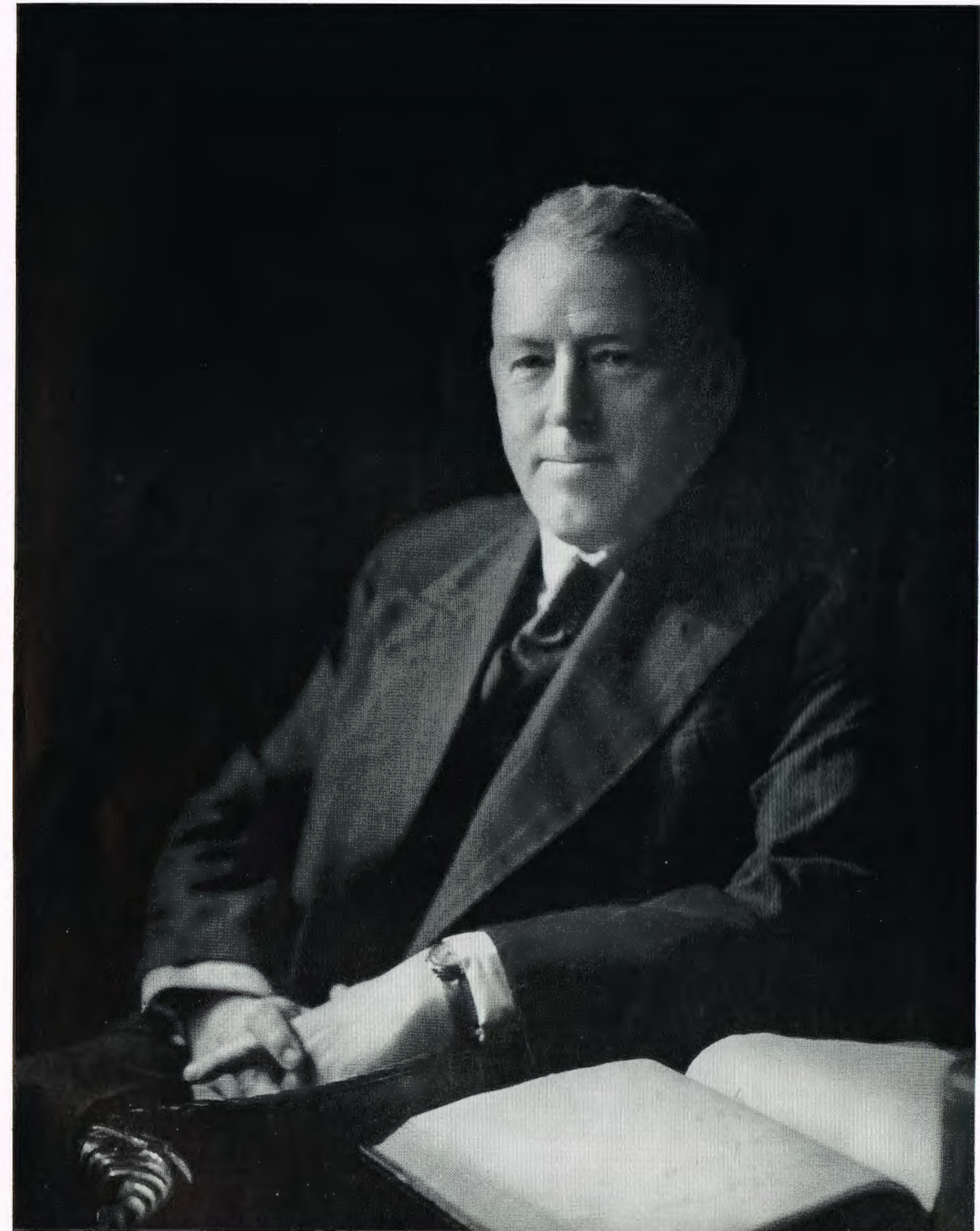
A hundred years from now it is possible that young Fleck's contribution to science in the four years before he went into industry may be better remembered than his achievements as chairman of I.C.I. Earlier this month, when Glasgow University gave him an honorary LL.D., the Regius Professor of Materia Medica declared that Fleck's findings "laid the foundation for Soddy's alpha and beta ray periodic tables and anticipated—in the best traditions of scientific progress—Moseley's spectacular researches which led to the conception of atomic numbers."

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THE FIRST world war, meanwhile, had found out in the chemical industry one of Britain's weakest spots in the struggle with Germany. Unlike Germany, which had energetically developed the Haber-Bosch process of producing nitrogen in the air, Britain still depended entirely on imported nitrates from Chile. If these failed to arrive, vital war production of nitric acid, explosives and fertilizer to grow more food also failed. For many drugs, fine chemicals and dyestuffs (including the dye for the First Hundred Thousand's khaki uniforms) Britain had depended on Germany herself. One of the biggest jobs facing the government was to build, on only a slender foundation, an entire chemical and explosives industry in Britain.

This vast and high-speed expansion drew Fleck into the Castner-Kellner Alkali Company as a qualified chemist to give advice on war production. When the war ended he had acquired experience and reputation enough to be made works manager of the firm's factory at Wallsend.

By that time the forces of economic concentration, hastened in the explosives side of the industry by the sudden need to rationalise for peacetime production, had already clotted the British chemical industry into four big groups—Nobel Industries under Sir Harry McGowan; Brunner, Mond & Co. led by Sir Alfred Mond and including Fleck's firm of Castner-Kellner; United Alkali, which was the product of an early



DR. ALEXANDER FLECK, Chairman of I.C.I.

(Photo: Howard Coster)

merger in 1890; and British Dyestuffs, like Nobel Industries the result of a post-war merger.

By 1925 all four groups were faced with Germany's reviving strength and competition, besides a large, well-organised American chemical industry. After the famous Mond-McGowan negotiation aboard the *Aquitania* in October, Fleck, with many others, found himself, overnight almost, an employee of the new Imperial Chemical Industries Ltd.

From that time until 1937, when he became chairman of Fertilizer and Synthetic Products Ltd., later known as the Billingham Division, Fleck's upward steps were big and rapid.

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IN PART this meteoric rise was a reflection of the industry's own expansion, especially in fertilizers and industrial chemicals. But it may also have been helped by the curious fact that McGowan, having achieved the monolithic unity of I.C.I., then decentralised it, in a sense, into semi-autonomous "divisions" which, although, scientifically speaking, they cross-fertilize one another with new ideas and products, are actually run and operated as separate and semi-independent enterprises.

This industrial decentralisation is also noticeable, in a slightly different sense, in the chemical "empire" overseas of which Fleck, from this week, takes charge. In its relations with its subsidiaries and with its main export markets I.C.I. has developed a flexible relationship with local partners which is the very opposite of the ill-fated Anglo-Iranian investment in Persia and which may provide at least some of the answers to the problem of economic development in a nationalist world.

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ALTHOUGH I.C.I. has subsidiaries all over the free world, very few of them are wholly owned by I.C.I. The big manufacturing subsidiaries in the Dominions (which themselves control further subsidiaries), and most of the newer ones in South America have between 40 and 60% local capital. And it is a point of policy that many of the directors and most of the employees should be local men. Each of the manufacturing subsidiaries has the right to most I.C.I. processes and patents, and the symbiotic relation between parent and subsidiary seems the least likely to offend national sensibilities.

Besides the eleven countries where I.C.I. has major manufacturing interests and the four more with smaller manufacturing subsidiaries there are twenty less-developed countries where I.C.I. has as yet only a selling company. Its sales organisation, as might be expected, is one of the biggest in the world and dealt last year with some £62 million in British chemical exports.

As chairman, one of Fleck's chief responsibilities will be to choose the moment when an expanding export market is ready to support its own local manufacturing plant. Indeed, through the decentralisation at home his work will lie largely overseas, and Fleck expects to begin a kind of imperial economic tour with a visit to Canada, where for the moment I.C.I. development is at its fastest.

At home one of his pet interests in recent years has been the

newly discovered potash deposits in Yorkshire. It was largely owing to his persistent conviction that these deep deposits existed and could be exploited that I.C.I. has recently conducted boring operations to discover the depth and limits of the potash field. It is Fleck's belief that a thorough geological survey of Britain might yet reveal new mineral resources which would make us less dependent on imports.

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OUTSIDE INDUSTRY his interests are few and simple. Most week-ends his rather rugged figure with its bearlike shoulders can be seen pottering round the eight-acre wood at his country home in the Tees Valley near Billingham. Unlike Gladstone, whose energetic axe chopped down the tree but left the stump behind, Fleck finds an art in getting his trees, as they fall, to lift their roots clean out of the ground. To do this he first digs round the tree and severs the roots with a mattock.

With his wife, whom he married in 1917, he used to be a great hill-climber. He still enjoys a good deal of walking. A big-boned Scot with large hands, he still, at 63, does not give the impression, sitting at his vast walnut desk in a neat but undistinguished suit, of a particularly pugnacious character—rather of a man who still finds in the open air and in physical exertion a necessary kind of recreation.

For a top-salary man he has only one expensive taste—motor yachting, and that preferably along the rocky coasts of western Scotland. Most of his evenings are spent quietly in his London flat in Hyde Park Gardens. He has no children, and prefers reading to any other entertainment. History has become almost a second interest to chemistry, and he has shown a keen interest in the historical researches at Durham University into the work of the Venerable Bede and the early English chronicles.

For most of us, brought up on tales of the brusque and ruthless big business tycoons of even thirty years ago, it is hard to accept the truth that this rather unglamorous scientist, with the quiet and steady temperament and untempered Glasgow accent, is the new type of captain of industry.

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BUT HE is by no means the first of his kind in I.C.I. The redoubtable Lord McGowan who retired in 1950, Sir Frederick Bain who as deputy chairman was also president of the Federation of British Industries in 1947, and Fleck's immediate predecessor Mr. John Rogers were all Scots boys (two of them also Glaswegians) who made good, step by step, inside the industrial machine. If there is any difference it is that Fleck is more of a scientist than any of them. Perhaps the chemical industry, which spends as much as 2½% of its annual turnover on research and development and employs a remarkably high percentage of science graduates on its staff, hardly represents the average pattern of British industry. But if other industries—particularly the new ones like aircraft or electrical engineering, or the basic ones like steel—are to expand and progress—as they must—as fast as the chemical industry, they too are likely to be led in time by men like Dr. Fleck, D.Sc., LL.D.

Information Notes

ANNUAL GENERAL MEETING

The annual general meeting of the Company was held in London on 18th June. Mr. J. Rogers, the retiring chairman, stressed that I.C.I.'s prices were, thanks to increased efficiency, in general lower than those ruling in America and Europe, and he gave a spirited reply to the nationalisation threat contained in the Labour Party's pamphlet "Challenge to Britain."

AFTER dealing with the results of last year's trading, the retiring chairman, Mr. Rogers, said in the course of his speech:

Here at home your company has maintained all its productive plants at a high level of technical efficiency, and we are constantly striving to improve our manufacturing processes. We are in the forefront in the study and application of modern methods of increasing productivity, and we are now giving our knowledge and experience in this field freely to British industry in general.

The steadily improving efficiency of your company's operations means lower costs of production, and these lower costs are reflected in the selling prices of our products. We have had to advance the selling prices of many of our products in recent years because of increasing costs of raw materials and rising wages and salaries, but we have been able to offset these cost increases to a considerable extent by savings resulting from improved methods and increased efficiency. As a result, our prices are, in general, lower than those ruling in America and in Europe.

In determining the policy to be followed, whether in pricing the products, in capital development or in any other sphere, your directors are conscious of their responsibilities not only to their stockholders, employees and customers but to the country as a whole.

You will remember that four years ago Lord McGowan told you that the whole Board of I.C.I. took the view that your company is not an appropriate subject for nationalisation. That remains the view of your board today, in whatever form state ownership is suggested. Lord McGowan also said that the Board would take all proper steps to oppose the nationalisation of your company if the attempt were ever made. Let me renew that assurance. You will, I am sure, agree that it would be contrary not only to the interests of the stockholders and of those employed by your company but also to the interests of

the country as a whole for I.C.I. to come under any form of state ownership.

I have just read the Labour Party's pamphlet called "Challenge to Britain." There is nothing in that document to cause me to change my view that any form of state ownership would be extremely detrimental.

The main reason given in the pamphlet for this programme of public ownership is that chemical production must expand to keep pace with the enlarged requirements of other basic industries. Of course chemical production must expand, and this is exactly what has taken place in the industry as a result of the enterprise shown by those in it. My speech today emphasises the expansionist policy which I.C.I. has consistently pursued. I.C.I. is meeting every demand for chemical materials made upon it in the United Kingdom, and the average level of prices is lower than that in the U.S.A. and Europe. In addition its exports have increased very substantially in volume and in value since the war and are now running at over £1,000,000 per week. I can say without qualification that no company has a finer record of expansion and enterprise.

Why, then, should public ownership be suggested as a safeguard against possible shortages which do not exist, and which will never occur, if private enterprise is permitted to go ahead? Surely the experience of the state-owned industries is convincing evidence that whatever else may be said about state ownership it is no guarantee that production will keep pace with increasing demand. I can only hope that those responsible for "Challenge to Britain" will give the whole subject further factual study and that in the long run wiser counsels will prevail.

It is not possible to mention all our interesting developments, but the growth of our interests in man-made fibres warrants special mention.

'Ardil'—the wool-like fibre which is made from protein extracted from groundnuts—has had a slow start, due partly to teething troubles in the plant and partly to the depression in the textile industries which occurred just as the 'Ardil' factory came into production. I am happy to be able to report that progress is being made in overcoming these early troubles. Improvements have been made to the product, and sales are now rising. There is every reason to believe that, with its many uses and its special characteristics, 'Ardil' will take its permanent place among the fibres to be used by the textile industries.

The demand for nylon grows as fast as we can add new plant to make it, and British Nylon Spinners, the capital of which is owned jointly by your company and Courtaulds, has had another excellent year.

The plant to manufacture 'Terylene' at Wilton on a large scale is planned to be in operation by the end of next year. The new articles of 'Terylene' clothing which you may occasionally see in certain shops are made from 'Terylene' produced at a small pilot plant at Hillhouse. After the most careful assessment of market requirements we are already putting in hand plans for a large extension of the Wilton plant, even though

the first unit of that plant is not yet in production. This is a good illustration of the point which I made earlier that an increasing proportion of the Company's productive efforts is being devoted to products which were unknown before the war.

As already publicly announced, we have decided to manufacture 'Terylene' in Canada as well. Pending settlement of plans arising out of the Anti-Trust case for the segregation from du Ponts of our interests in Canadian Industries Ltd. we have incorporated a new subsidiary, Imperial Chemical Industries of Canada Ltd., wholly owned by I.C.I., and this new company is going straight ahead with the purchase of land and the erection upon it of a plant to manufacture 'Terylene.' In this way we are taking time by the forelock and not awaiting the outcome of the protracted legal proceedings in the United States. After the proposed segregation it is intended to offer this project to that successor company of C.I.L. in which I.C.I. will be the principal shareholder and in which Canadians will participate as shareholders. This procedure is in accordance with I.C.I.'s policy of regarding the successor company as the normal medium for developing manufacturing projects in Canada.

THE RISE OF INDUSTRY

The Darbys of Coalbrookdale are one of the oldest ironfounder firms in the country, and their records date back to the seventeenth century. From this mass of material a fascinating study of the rise of industry as we know it today has been written by Dr. Raistrick in a book entitled Dynasty of Iron Founders (Longmans, 30s.).

At the formation of I.C.I. the late George Cadbury senior, in discussing Brunner, Mond & Co. said: "If Mond hadn't been a Jew and Brunner a Unitarian you would have said they were Friends (Quakers)."

There is much truth in this dictum: Brunner and Mond regarded industry in the same way as the Quaker industrialists of the eighteenth and nineteenth centuries, and they all show one common bond of outlook.

The Frys and the Cadburys, the Lloyds and the Foxes, the Peases and the Gurneys, to name but a few, built up their businesses with at least four common ideals. First, their word was their bond "without oath or swearing"; they believed that the customer must be treated with scrupulous honesty; not that "The customer is always right" but that the customer deserved full value for his money. Secondly, that the employee deserved care and consideration, "the workman being worthy of his hire"; thirdly, that progress could only be possible by initiative and co-operation at all levels, and fourthly, that they themselves should receive a due reward for the risks that they took and the labour they bestowed on their businesses. Dr. Raistrick's book is a most admirable record of these beliefs, and the Darbys and Reynolds of Coalbrookdale may be accepted as typical under all the four headings.

In 1699 Abraham Darby established an ironworks in

Bristol and in 1707 transferred his plant to Coalbrookdale.

The story of the growth of the industry is punctuated by records of achievements of the first magnitude in regard to ironfounding and the development of foundry practice: Abraham Darby's application of coke as fuel in iron smelting rather than wood charcoal, the substitution of cast iron for brass in the early steam engine cylinders, the introduction of cast iron tram rails and particularly flat rails with flanged wheels, and the first cast iron bridge that was ever built.

In 1756 Richard Reynolds married Abraham Darby II's daughter Hannah and joined the company, and it is clear that he was a man of great ability who brought fresh and original blood into the business. He and his brother-in-law, Abraham III, were sincere Quakers, and indeed the majority of the workpeople employed belonged to the Society of Friends. They refused to profit from the manufacture of armaments, despite the immense fillip which the outbreak of the Seven Years War in 1756 gave to the iron industry in England, but they "continued with their normal production of pots and domestic castings, steam engine parts and pipework and pig iron, now largely for the forges."

Richard's son William invented the "inclined plane" which enabled barges to be moved from one level in a canal to

<i>Imperial Chemical Industries Ltd.</i>									
<i>Old Blast Furn.</i>									
To Henry Cartwright coak	22	15	10	10	10	10	10	10	258
To Andrew Cartwright coak	20	15	10	10	10	10	10	10	270
To John Thomas & Co. mould	20	15	10	10	10	10	10	10	184
To Rich. Russell carriage & royalty of 15 Ton 5 lb Limestone at 4/1	3	3	9	4	18	18	18	18	260
To Geo. Burras carry Madly hole sand 55 lb. at 2 copy sand 6/1	1	1	1	1	1	1	1	1	277
To 1/2 Clay from y. Millstone at 1/2 Brick from y. Stanley 10 lb. at 2	1	1	1	1	1	1	1	1	270
To Giles Martin Royalty of 55 lb. of sand at 2	0	9	2	2	2	2	2	2	273
<i>New Blast Furn.</i>									
To Henry Cartwright coak	9	15	10	10	10	10	10	10	259
To Andrew Cartwright coak	16	15	10	10	10	10	10	10	270
To In. Nicer mould	16	15	10	10	10	10	10	10	184
To Thom. Unions d. of 228 q. 35-2-25 at 16 1/2 & 318 q. 21-1-27 at 2	4	12	1	1	1	1	1	1	232
To Rich. Hazlewood carry 9 Ton 7 lb Limestone at 3/6	1	14	6	3	3	3	3	3	263
To In. Brook Carry 10 Ton 5 lb. D. at 3/6	1	17	2	4	4	4	4	4	248
To In. Smithman Royalty of 20 Ton 4 lb. D. at 7	0	11	11	11	11	11	11	11	261
To Rich. Hanchier d. & carriage of 7 Ton 4 lb. D. at 1/1	1	10	7	7	7	7	7	7	237
To Geo. Burras for y. Carriage of 75 lb. Madly hole sand at 2	0	12	6	6	6	6	6	6	270
To Giles Martin Royalty of 75 lb. of sand at 2 of 2 load	0	12	6	6	6	6	6	6	273
<i>Upper Air Furn.</i>									
To In. Tylor mould	274	2	5	2	2	2	2	2	271
To Thom. Tilly d. of 196 q. 32-2-35 at 16 1/2 & 275 q. 21-1-27 at 2	4	12	1	1	1	1	1	1	267
To Rich. Ford carry Iron from y. New Blast 7 lb. at 12	0	7	0	0	0	0	0	0	252
<i>New Air Furn.</i>									
To Thom. Unions mould	76	15	10	10	10	10	10	10	266
<i>Warehouse</i>									
To Rich. Ford carry goods to Severn 17 Ton 19 lb. from N.B. up 6 lb. at 1/1	3	11	7	7	7	7	7	7	254
To Geo. Burras carry d. to d. 8 at 2	0	1	4	4	4	4	4	4	270
To Rich. Williams carry d. to d. 4 lb. at 16 to Shipnall 4 lb. at 8	0	8	0	0	0	0	0	0	255
To Widow Benlit carry d. to d. 3 lb. at 16	0	4	0	0	0	0	0	0	259
To Will. Hazlewood carry d. to d. 3 lb. at 16	0	4	0	0	0	0	0	0	259
<i>Forge</i>									
To George Burras carry Skulls down 15 at 10 1/2 Ton	0	0	7	7	7	7	7	7	270
To Rich. Ford carry Iron to Severn 6 Ton. Pigs to Forge 1 Ton at 10	0	5	10	10	10	10	10	10	253
<i>Generall Charges</i>									
To Rich. Ford Carry Boxes to New B. 3 lb. at 1/1 mend roads 1 day 3/6	10	6	6	6	6	6	6	6	246
Clay from Severn to Mill 9 Ton at 10 A. Millstone to y. Mill 1/1	0	3	6	6	6	6	6	6	252
To d. Hawling 2 pieces of timber from y. Pool Tail to Sawpit	0	1	0	0	0	0	0	0	15
<i>Pigg Yard</i>									
To Rich. Ford Carry pigg to Severn 10 Ton at 12 1/2 Ton	2	6	9	9	9	9	9	9	269
<i>Warehouse & Pigg Yard</i>									
acc for Goods Pigg made & waid of In d. N. 2 1/2 lb. 2 1/2 lb. 2 1/2 lb.	20	12	2	14	6	3	10	22	264
To Old Blast Furn. For	20	12	2	14	6	3	10	22	269
To New Blast Furn. For	746	16	1	8	24	2	2	291	258
To Upper Air Furn. For	915	114	2	20	28	1	14	2	259
To New Air Furn. For	196	20	1	19	2	1	19	2	271
<i>Sund. acc. d. to Pigg Yard in Feb 53. then not being room large</i>									
1877-316-3-5	57	1	24	313	3	13	688	14	252

another without the loss of lock water, and throughout the book one meets names which are the very essence of engineering and which made the Industrial Revolution possible. Boulton and Watt, Newcomen, Trevithick, Brindley, James Sadler and Telford were all constant visitors to the works and utilised the technical skill of the craftsmen at Coalbrookdale on every possible occasion.

During the depression in trade following the end of the Napoleonic wars Coalbrookdale suffered, and in 1821 when Joshua Field visited the works he commented that the place appeared much neglected; but in 1822 Abraham IV and his brother Alfred started to take an active interest in the business, and the infusion of new blood carried the concern to the greatest level of its prosperity.

In passing, it is of interest to note how short-lived were the managers; their deputies, always Quakers and always closely

connected by marriage, were forced to take charge at an early age due to the death of the senior member of the firm. The successive managers took charge at the following ages: Abraham Darby I, 30; Richard Ford, 28; Abraham II, 21; Richard Reynolds, 27; Abraham III, 18; Edmund Darby, 21; Barnard Dickenson, 29; Abraham IV, 23; Alfred Darby, 23. Thus, between 1708 and 1828 there had been nine young or comparatively young men in the saddle. It is no wonder that the affairs of the company give the feeling of vitality and flexibility throughout its history.

Dr. Raistrick's book is obviously a labour of love as well as being a most valuable addition to the literature of engineering of the Industrial Revolution. It is admirably documented with maps and sketches and a very complete index, and it is to be most heartily recommended, not only to the engineer but to all students of industry.

J. ROBIN ALLEN

I.C.I. EXPORTS—1952

Despite import restrictions I.C.I. has once again hit a record export figure of just under £62,000,000. Here is a brief analysis of how these exports were made up.

THE year 1952 was one of contrasts. For the first time since the war supplies were freely available for export, but imports to important traditional markets were restricted through shortage of sterling or other causes.

During the first quarter of the year large exports were made, but subsequently Australia restricted imports, import licences were no longer forthcoming from India, and the general world textile depression caused a reduction in demand for many chemicals and dyes. Fortunately, however, the demand for fertilizers, assisted in many cases through American dollar aid, remained strong, and as Billingham had additional supplies of sulphate of ammonia available for export full advantage was taken of this situation.

Record exports of sulphate of ammonia amounting to 437,000 tons were made in the calendar year. Later in the year there was a revival in demand from China in our traditional soda ash trade, which it should be noted is a non-strategic product and for which the Board of Trade freely granted export licences.

The combination of increased sulphate of ammonia exports and the revival in demand from China offset the depressive factors. As a result the year closed once again with a record export figure of just under £62 million, which is nearly £4 million more than in 1951.

Billingham Division, of course, contributed most to this result, and Metals Division also had a large increase. Most other Divisions, with the exception of Nobel and Alkali Divisions, had reduced exports.

Under the circumstances ruling, the overall result must be

considered satisfactory. It does, however, conceal the fact that I.C.I. exports, alkali in particular, were seriously reduced in the latter part of the year through lack of sterling in Argentina, Brazil and other territories. This situation has been aggravated in 1953 and a serious reduction in our alkali exports has occurred in the first quarter of this year, as virtually no shipments could be made to these territories.

In 1952 direct exports to dollar markets amounted to U.S. \$12,400,000, which is a small reduction on 1951. However, there were in addition some large shipments to non-dollar markets which were paid for in dollars. Our dollar exports in 1952 therefore exceeded those in 1951.

The seller's market has, of course, long ended, and we have encountered severe competition from German and other Continental producers. The Japanese also were very active in bidding for U.S. dollar aid tenders for sulphate of ammonia, some of which they secured at exceedingly low prices which were reported to be below their costs of production. Subsequently they were unable to supply some of the tonnage for the orders they had secured.

British exports today are suffering severely from the lack of sterling purchasing power of a number of traditional markets, particularly Argentina and Brazil. The number of markets affected continues to grow, and recently Egypt and Turkey have been added to the list. All these markets are important traditional markets for I.C.I., particularly for Alkali Division, and unless means are found or devised to enable them to purchase British goods, then I.C.I. exports in 1953 are likely to be seriously reduced.



Evening with School Bass

By Alex Jardine

Thanks to nylon casts and lines, which are not corroded by sea water, sea fishing with trout rod and fly is a new and developing sport. Here is the story of a bag of seventeen school bass one hot summer's evening.

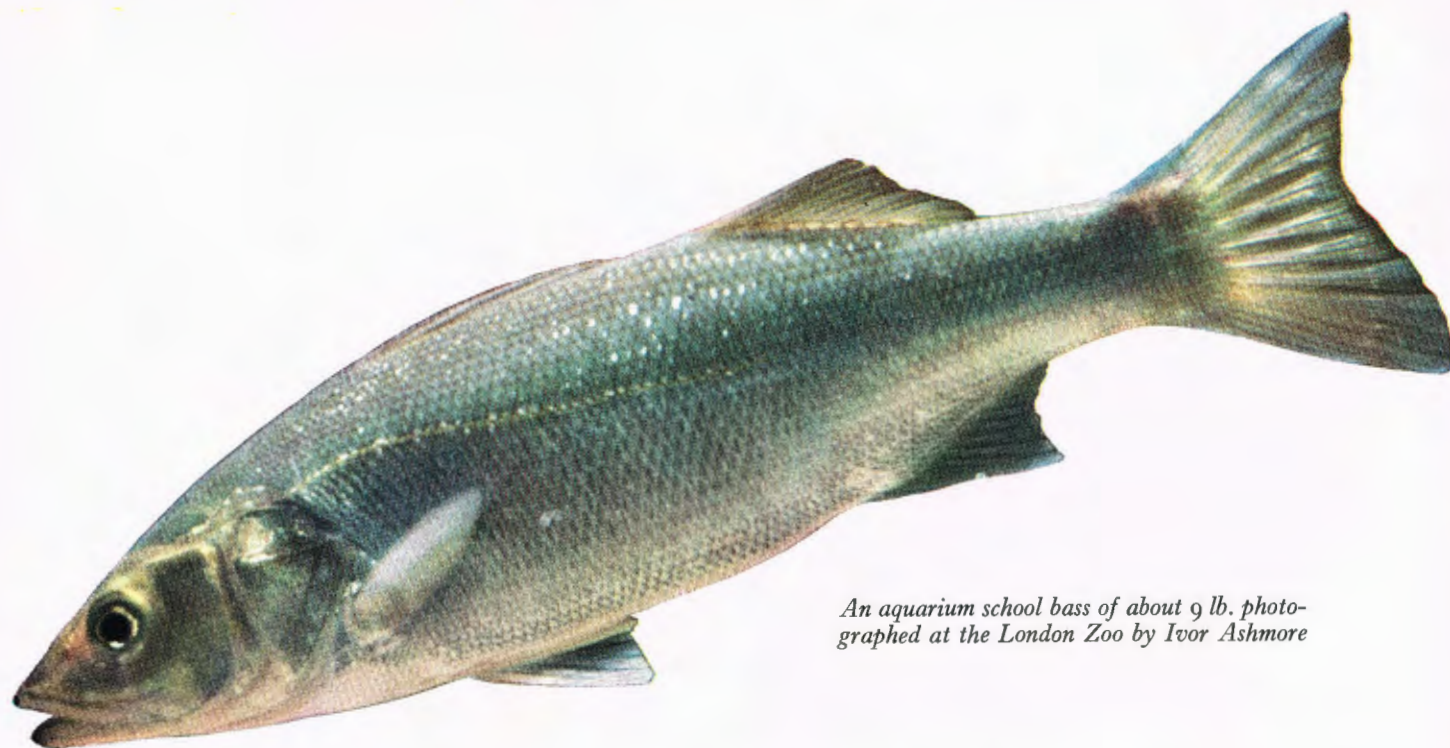
IT was in the summer of 1900—July, to be exact—that a certain Mr. Gomm landed a 15½ lb. bass at Margate pier. Few larger bass have been taken in Britain on rod and line since that memorable date.

Last year, half a century later, I tried for bass along the coast that Gomm knew and loved so well. He was a great fisherman, who studied his tackle and the water in which he fished.

For several evenings I had watched the bass, great shoals of them, gleaming and flashing in the shallows,

scattering the sun's reflection on the incoming tide. The big fellows had moved inshore, and the warm weather was the delight of the school bass, setting them leaping and sporting in the glass-calm seas, as wild as the trout in my little Breconshire pool, and as temperamental. Eventually I decided that the time had come to approach them with rod and tackle.

I chose my tackle with care, for even the small school bass are powerful fighters; so an 11 ft. split-cane rod, a stout trout line and a nylon grilse cast were my choice.



An aquarium school bass of about 9 lb. photographed at the London Zoo by Ivor Ashmore

The flies I selected were salmon flies—a Silver Doctor and a Jock Scot size 4. Next I put 100 yards of 0·011 'Luron' 4·8 lb. nylon upon my fixed-spool reel and tried a few imaginary casts. The hook points of the spinning lures were tested for sharpness: they should be needle sharp. My choice was small Norwegian Delphin spoons and a rubber Sand Eel. These rarely fail.

All was complete, and I set forth with the evening off-shore breeze so soft that it scarcely disturbed the marram grass on the sea wall. The sea was cellophane calm. The incoming tide ran slowly forward, unbroken save an iridescent line across the silt. Indeed, this was one of those golden evenings by which one remembers England, so quiet that the cry of oyster-catchers and redshank could be heard a mile along the shore.

That evening I made for the mussel banks that formed an archipelago of dark Lilliputian islets, slowly submerging beneath the gentle swell. The tide-race between them was the hunting ground of the school bass. As I studied the water I thought of those blank days in the past when with conditions seemingly perfect I had returned with empty creel. I waded outwards 150 yards beyond the tideline in water two feet deep and as warm as my hand, slowly retracing my steps in time with the incoming tide.

Full twenty minutes I waited, and the sun was a blood-red disc beyond the Essex coast before the bass came. Then they were all around me—great shoals, leaping in joyous abandon and making the tide-race between the mussel banks boil with golden foam. Hundreds of fish were there. I cast my Silver Doctor lightly into the broken water—blank; I recovered the line slowly and cast again.

Then a strike. A fish was on, with the line streaking off the reel drum in a long, high scream. As lively as a 3 lb. trout and as strong, he made for the dangerous channel between the seaweed-covered banks. But I had him before he got there, a flashing two-pounder.

Others followed—half-pounders, pounders, and a fighting giant of 3 lb. or more. Then I hooked one really big fellow. He described an arc in the air like a fresh-run sea trout and smashed me twenty yards beyond the banks, when I was almost back to the high-water mark.

Now for the spoon and the sturdy little spinning rod. No time to lose; the sun had set and the sky was a deeper hue. I cast swiftly forty yards into the darkening sea. The line flashed off the fixed spool reel like silver. I retrieved it—a blank. I cast again and again, but the spoon came back untouched.

The Sand Eel was on in a jiffy. Again a long cast across to the old wooden groynes, and the line came back in equal strain; but suddenly, bang! He was on—a nice fish of over a pound. Again and again I cast, and for a brief spell the pace was fast and furious. Then the line came back to me slack; more casts followed, with the same results. The bass had gone, as suddenly and mysteriously as they had appeared.

For a while I sat and watched the phosphorescence of the tideline and listened to its sigh along the shore. Then I packed my kit and turned to go, while the planet Mercury brightened in the eastern sky. Seventeen bass by which to remember that golden evening, and the lone walk home, with the call of seabirds and the flighting duck coming down the tide.

BEAUTY IN INDUSTRY

the story of a unique Manchester artist

By the Editor

THE son of an estate agent, L. S. Lowry was born in Manchester in 1887. The urge to paint came to him when he was 21. He then went to the Manchester School of Art, where he studied for two years. From 1909 onwards he lived simply with his mother and father in a small house at Rusholme, a suburb of Manchester, and later at 117 Station Road, Pendlebury. He was an only child, and he was a child with an only hobby—to paint the beauties of grimy, dirty Manchester just as he saw them.

For thirty years he painted like this, entirely on his own, unrecognised and unencouraged by critics, and indeed unknown even to his fellow painters. Then one day there occurred one of those strokes of luck which changed not only the whole of Lowry's career but the history of modern art.

A number of his pictures, of which he had sold almost none, were lying with the London frame-makers, Bourlet. Into this frame-makers' shop one day in 1938 there walked Mr. Alexander Reid, the senior partner at the Bond Street Lefevre Gallery.

"Whose are these paintings?" asked Mr. Reid. They told him. He examined them and saw their worth—paintings that had never been shown before, apart from one unnoticed exhibition of some half-dozen pictures at the Arlington Gallery in 1936. Mr. Reid persuaded Bourlets to bring out more of Lowry's paintings from the store room.

"We send them on his behalf to annual exhibitions like the Royal Society's" they said; "but they mostly come back, although he deserves to sell." Mr. Reid examined the paintings and was convinced he had made a discovery. He asked for the canvases to be sent round to his gallery.

From then on there came a change in the fortunes of Lowry that can only be described as dramatic. His canvases—all those efforts of painting alone and unrecognised for thirty years—were acquired by Mr. Reid. In return for this, and in return for the promise from Lowry

that he should handle his future work, Mr. Reid set about the task of showing Lowry to the public and convincing the art world that here in their midst was a genuine British artist of genius, belonging to no school.

The first of Lowry's one-man exhibitions was held in 1939. The results were modest but encouraging. A few paintings were sold, including one to the Tate, and from then on his pictures, well hung and well framed, were available to be seen by the public at the Lefevre Gallery.

The next Lowry exhibition was in 1942. It was a year perhaps when you would have thought that little time could be spared for the appreciation of art. Nevertheless, even in those days the papers continued to give space to art criticism, although critics naturally had to be sparing of their words. The reception given by the newspapers to Lowry was mixed, but it was on the whole favourable. Perhaps the most discerning of all the notices he received was that written in *Time and Tide* by Mr. Maurice Collis, later to become art critic of the *Observer*. He wrote as follows:

While critics and patrons have been fuddling away their time with fancy gentlemen, smart at serving up the latest receipt from abroad, he has been quietly working in urban Lancashire, perfecting his own style and transforming, in the way only a genuine artist can transform, a reality of back streets, ragamuffins, courtyards, football, towpaths and tenements into feeling and beauty. . . . The construction of his street scenes is instinctive and subtle; their multitudinous figures, thrown on apparently haphazard, form a pattern actually quite balanced, a balance not only of design but of colour. Nor is this figure-pattern a mannerism; you do not hear the creaking of any machine; the synthesis is new each time; it is more an intuitive than a reasoned construction. . . .

In short, what you have got is a little English master. Those words of 1942 are still perhaps as penetrating an appreciation of Lowry's painting as any.

Lowry has seen beauty where others have seen only squalor and ugliness. It is the beauty of factory chimneys



An Industrial Town

(By permission of the Museum and Art Gallery Committee of the Corporation of Birmingham)



St. Simon's Church, Salford (now demolished)

(By courtesy of Salford Art Gallery)

and small boys playing in the streets; of old men and women shuffling at the street corner; of a certain quality of luminous reflection of light which is a paradoxical feature of the industrial north. Moreover, all this is set out in a manner which is completely individual. It is untouched

by the conventions of French impressionists whose work has had such an enormous influence on later artists. It is perhaps nearest in outlook to Hogarth and Rowlandson; but yet the balance of design and the quality of humanity and warmth are peculiar to Lowry.



River Scene

(By courtesy of Glasgow Art Gallery, from a block loaned by Lefevre Gallery)

Manchester University was among the first to recognise the talent of its own son. In 1945 the University conferred upon Lowry an honorary degree of Master of Arts; and Lowry was introduced to the chancellor of the university in the following words:

I present to you a Lancashire artist of rare distinction. Without attaching himself to any school or subscribing to the artistic dogmas of any coterie, he has set himself to put on canvas the essential truth about the Lancashire scene and Lancashire people. His work is marked by a ruthless sincerity which prevents it from falling into mere prettiness or sentimentality, while the artists' obvious and deep affection for his subjects ensures that the picture, however grim, shall never be sordid. He confers beauty on the seemingly unattractive by the affectionate understanding which he brings to its portrayal.

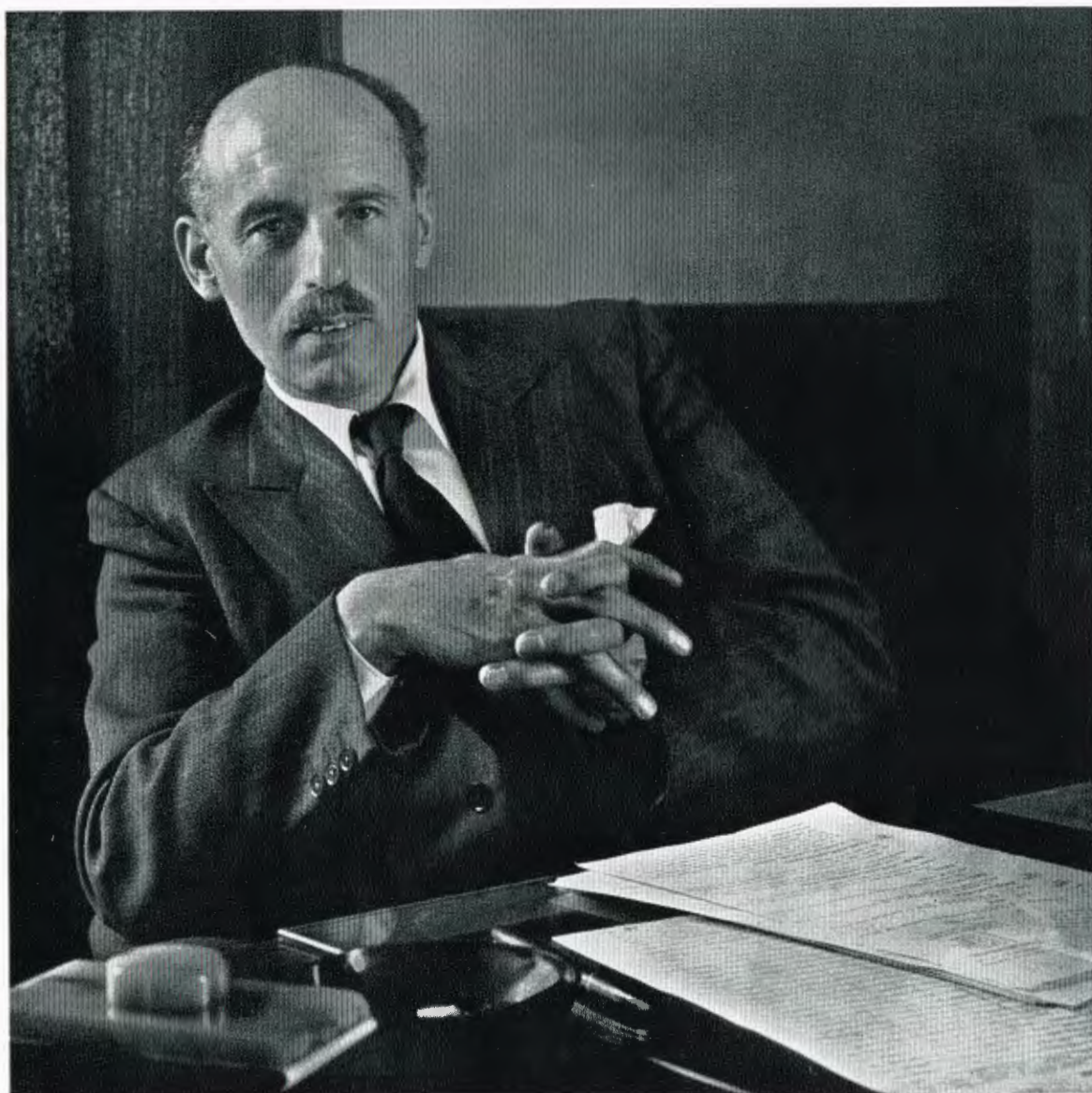
L. S. Lowry is today a well-known name. A large painting of his commands the figure of £400, and a small canvas costs £80 or £90. His works have been bought by all the leading galleries of the country.

Of the paintings which we reproduce, the picture from Birmingham entitled "An Industrial Town," a canvas measuring 17½ in. × 21½ in., has never been reproduced

before. It is in some ways a typical Lowry industrial landscape, and it resembles the more famous painting called "The Pond" which was bought by the Chantrey Bequest and is now at the Tate Gallery. It was painted in 1944.

The picture of St. Simon's Church at Salford which hangs in the Salford Art Gallery was painted by Lowry in 1928—in some ways the happiest phase of all his painting. To appreciate the strength of the man's character it must be remembered that eleven years were to elapse after this picture was painted before his first exhibition was to be held. The St. Simon's Church picture not only has a beautiful balance of architecture and colour but also is a good example of Lowry's talent in catching the transient scene as a mixed crowd of people cross a street.

Our other picture, entitled "The River Scene," which belongs to the Corporation of Glasgow, was painted fourteen years after the St. Simon's Church one. The artist's greater assurance is noticeable. He has here undertaken the painting of a large and complicated landscape calling for a careful arrangement of colour values. But there is the same individual touch as in the earlier picture: the same theme of moving figures against a silent architectural background whose inspiration is the everyday life of industry.



K. W. PALMER

KEITH WILLIAM PALMER, known for some obscure reason as Jim, was born at Somercoates, Derbyshire, in 1907. He was a very bright boy, learning came readily, and the educational path was an easy and pleasant one that led him through secondary school to Nottingham University to do chemistry, and then to the Research Department of Dyestuffs Division in 1930.

He was fairly keen on a works career and welcomed, when it was offered, a move to Huddersfield Works in 1932. Looking back he regards this as a propitious move: the many-sided existence of a plant manager matured him and gave him the chance to develop and make known his characteristic talents. When Dyestuffs Division undertook the manufacture of nylon at Huddersfield Works in 1940 he was the natural choice to run the plant, and when the time came to design and build a new nylon factory at Billingham he took charge of the job, and became

the first manager of the new Nylon Works and the Division's authority on the manufacture of the fibre-forming polyamides.

His peculiar and personal talent is, undoubtedly, for arranging things: his thoughts, his men, his schemes—all are characteristically well ordered, free from loose ends. If given the least encouragement he will enthusiastically arrange your affairs too. His mind is quick and fertile and will frequently reach a cut-and-dried proposal while others are ingesting the data. As he expresses himself fluently, even powerfully, on paper or aloud, the important business of influencing people and getting his own way comes relatively easily.

The same fluency appears in another activity which club smokers know well at Dalton Grange, Huddersfield, and Norton Hall, Billingham. He will write you a lyric, a limerick, a parody or a three-act play with less apparent difficulty than it takes most of us to write a weekly report.

I.C.I. NEWS

MR. JOHN ROGERS, O.B.E.

ON the retirement of Mr. John Rogers from the chairmanship of I.C.I. after 54 years' service with the Company and its predecessors, Mr. A. J. Quig, a deputy chairman, writes:

I am never likely to forget my first meeting with John Rogers. It was a long time ago—in 1910, to be exact—when I was occupying a very junior position in the office of Nobel's Explosives Co. in West George Street, Glasgow. Mr. Rogers, then aged 32, was at that time the company's technical manager. To me he was only a name, for I had never seen him, and when on the day in question I received a summons to his presence, the call sent me off in a flurry to the wash-room, where I brushed my hair and straightened my tie. Whatever deficiencies Mr. Rogers might later discover in me, I wanted to be sure that at least his first impression was reasonably good.

That interview remains vivid in my memory because of the humanity of the man who faced me across his desk. The men who constituted the management of Nobel's in those days were, for the most part, a formidable bunch. To me they seemed to be about as far above ordinary mortals as Messrs. Hillary and Tensing were from the rest of us when they reached the peak of Everest on 29th May.

You may judge of my surprise, therefore, when I found that he obviously did not regard my presence as a waste of his time, nor my affairs as something to be dismissed as quickly as the basic demands of courtesy permitted. On the contrary, he was clearly pleased to see me and showed a genuine interest in the somewhat petty job that I was doing.

I was only 18 then, at the start of my business career and as nervous as the young man at this critical juncture in his life usually is. The ease and friendliness with which John Rogers received me on that day warmed my heart towards him as it has warmed thousands of others since, and the feeling has never cooled. He possesses that true quality of greatness—patience,

even under provocation. He can tolerate fools gladly, as though he believes with the bard that some people are indeed "fools by heavenly compulsion," though I know no man who is swifter in discerning a fool when he encounters one.

John Rogers, like his predecessor, is a Glasgow man, and like his predecessor he came up the hard way. At the age of 14 he found himself a job as a lab. boy in the Royal Technical College, Glasgow, where in return for his services he received free tuition for two years. A good enough beginning, no doubt, but not one that need necessarily lead to one of the highest positions in the whole of world industry. But the lad clearly possessed grit of a high order, because in the course of his second year he succeeded in winning a substantial scholarship, and before he left the technical college he had been appointed lecturer assistant to the professor of chemistry. He was only 21.

Failure to recognise promise was not one of the failings of Nobel's management, and so it is not surprising that they selected him to be one of their first research workers. Not long after he joined Nobels, he met Lord (then plain Mr.)

McGowan for the first time. It was the latter who, some considerable time later, recommended Mr. Rogers' appointment as the first technical manager at Nobel's headquarters, and when Nobel Industries Ltd. was formed he was elected to its board as technical director.

Up to this juncture Mr. Rogers' career had been one of swift advancement, and it did not stop there. In 1926 I.C.I. was formed by the merger of Nobels, the British Dyestuffs Corporation, Brunner, Mond & Co., and the United Alkali Company, with Lord (then Sir Harry) McGowan as president. At the first meeting of the I.C.I. Board in December of that year Mr. Rogers was made a joint technical director, and so he remained until 1940, when he was appointed a deputy chairman.



Mr. Rogers' outstanding gifts had long been recognised far beyond the bounds of the Company, and the State was glad to make use of his services in both world wars. For his services in the first he was awarded the O.B.E.

In the early days of World War II he accepted the appointment of Deputy Director-General of Explosives and then Director-General. Some time later he became chairman of the Ammunition Board at the Ministry of Supply. These duties—vital to the successful prosecution of the war—he discharged with all the consummate skill which has always characterised him, until the war had entered its final stages. Not until victory was beyond doubt did he return to I.C.I. and again take up his normal duties.

In December 1950, when Lord McGowan intimated that he wished to resign from the Board for reasons of health, Mr. Rogers was unanimously appointed to take his place. So it came about that another Glasgow man, born in the very same district of the same city as his predecessor, achieved the pre-eminence of Chairman of I.C.I. Shortly after his appointment, the University of St. Andrews conferred upon him an honorary LL.D.

I feel—and I think I speak for 100,000 others—that Mr. Rogers' tenure of the chair has been all too brief. He has earned not only our respect but our affection, and I am sure that all of us—staff and workers as well as his colleagues of the Board—are going to miss him. His leadership of our large team has been made even more effective by a dry sense of humour which we shall all miss.

In his retirement Mr. Rogers will not be able to indulge in his favourite game of lawn tennis, at which he was no mean performer. He wears his years lightly, but an accident put an end to this particular pursuit. He will have more time, however, to devote to his collections of old silver and Chinese ivories, and both he and Mrs. Rogers will be able to indulge their love of travel without the burden of business affairs.

Through 54 years he has served this fortunate company, and in the years of his leadership he has seen I.C.I.'s reputation grow significantly. He has the deep personal satisfaction of handing over his charge full of strength, vitality, and promise—a state of affairs to which his unusual gifts have made no small contribution.

HONORARY DEGREES FOR CHAIRMAN

Dr. Alexander Fleck has recently received two honorary degrees, at Glasgow and Durham Universities.

At Glasgow on 17th June the honorary degree of Doctor of Laws was conferred on him by the chancellor, Lord Boyd Orr. Dr. Fleck was presented by Professor Stanley Alstead of the Chair of Materia Medica.

Napoleon's encouraging assertion that there was a field-marshal's baton in every soldier's knapsack found its modern parallel in the unwritten biography of the distinguished chemist Dr. Fleck, said Professor Alstead. He had entered the university fifty years ago not in the luxurious guise of a matriculated student but with the modest status of a laboratory assistant. Far from indulging in self-pity on this account, he had emphasised that those two years provided an experience of considerable value to him when he became an undergraduate and later a member of the teaching staff.

Professor Alstead recalled that as early as 1911 Dr. Fleck was investigating the properties of twelve of the radio elements. His findings laid the foundation for Soddy's alpha and beta ray periodic table and anticipated—in the best traditions



Dr. Fleck (right) at Durham after receiving the honorary degree of Doctor of Science

of scientific progress—Moseley's spectacular researches which led to the conception of atomic numbers. In Dr. Fleck's further publications in 1913 scientists recognised the seed of an idea which matured and blossomed into the new subject of isotopes.

"His work has always been characterised by a wide knowledge of the basic sciences, the rare attribute of insight and a remarkable capacity for making quick decisions. In the business world these are hall-marks of wisdom—acknowledged to be more precious than fine gold; and notwithstanding Dr. Fleck's agility in dodging the beams of limelight which have shone across his path, his qualities did not go unnoticed in the realm of commerce. He has occupied positions of great responsibility in Imperial Chemical Industries, a firm renowned for enterprise in applied science as well as for its generous policy towards academic research."

The university had watched with mingled pride and pleasure Dr. Fleck's steady march to his present post of deputy chairman and chairman-elect of that gigantic organisation—an achievement which, in the chemical world, was tantamount to discovering the philosopher's stone wrapped in the golden fleece.

The honorary degree of Doctor of Science was conferred on Dr. Fleck by Durham University on 3rd July. The ceremony, held in the Great Hall of the castle at Durham City, less than 25 miles from his home at Norton Hardwick Hall, was presided over by Dr. C. I. C. Bosanquet, vice-chancellor of the university and rector of King's College, Newcastle.

Presenting Dr. Fleck, the public orator referred to the period when he was chairman of Billingham Division. He had retained his Stockton home after becoming a director of I.C.I., and busy though he was, he found time to be a member of the Council of Durham Colleges.

"The announcement of our intention to offer him a doctorate was at once followed by his election to the highly responsible position of Chairman of Imperial Chemical Industries Limited; and who is to say that *post hoc* was not *propter hoc*? Be that as it may, we congratulate our graduand upon his appointment and his company upon their chairman.

"Recognising that academic pursuits must be related to the needs of society, we are grateful for the interest which I.C.I. has so long taken in universities and we look with confidence to Dr. Fleck for help in preserving that right balance between intellectual liberty and social utility which is one of the principal marks of a civilised society."

I.C.I. RIFLE LEAGUE

From the results below it will be noticed that for the 1952-3 season the league was divided into four, with the fourth division consisting of teams with little experience of league shooting. These teams were allowed a little rope in the way they returned their cards, but it is hoped that this year's experience will enable them to conform more strictly to the rules next season.

The general entry was slightly more numerous than last year; several newcomers were welcomed to the league, and it is hoped they will be able to raise teams again next season.

The honorary secretary, Mr. J. M. Cullen, points out that any department of any division with people interested in shooting can enter a team in the league. Lack of experience is no bar; a special division can always be formed for beginners.

I.C.I. Rifle League, 1952-3

FINAL LEAGUE TABLES

DIVISION 1						
	S	W	D	L	Pts.	Agg.
1. Kynoch A	6	5	0	1	10	2970
2. Billingham A	6	3	0	3	6	2952
3. Ardeer A	6	3	0	3	6	2932
4. Chance and Hunt A	6	1	0	5	2	2894

Awards

Kynoch A: Directors Trophy and 5 pocket badges
Billingham A: 5 bronze medals

Individual Averages (6 matches)

1. T. J. Knight (Kynoch A)	100.00*
2. A. Skinner (Kynoch A)	99.83
3. G. Hartley (Billingham A)	99.83
4. W. Godwin (Kynoch A)	99.50
5. N. Ackroyd (Billingham A)	99.50

* Gilt medal

DIVISION 2						
	S	W	D	L	Pts.	Agg.
1. Kynoch B	8	7	0	1	14	3910
2. Nylon A	8	5	0	3	10	3891
3. Castner-Kellner	8	3	0	5	6	3863
4. Billingham B	8	3	0	5	6	3768
5. Ardeer B	8	2	0	6	4	3814

Awards

Kynoch B: 5 gilt medals
Nylon A: 5 bronze medals

Individual Averages (8 matches)

1. P. Griffith (Billingham B)	99.1*
2. J. Horan (Nylon A)	99.1*
3. K. Coleman (Kynoch B)	98.4

* Tie shoot for gilt medal

DIVISION 3

	S	W	D	L	Pts.	Agg.
1. Kynoch C	10	10	0	0	20	4759
2. C/E Dept., Runcorn	10	8	0	2	16	4689
3. Chance and Hunt B	10	4	0	6	8	4628
4. Hillhouse	10	4	0	6	8	4384
5. Nylon B	10	3	0	7	6	4622
6. The Frythe, Welwyn	10	1	0	9	2	4442

Awards

Kynoch C: 5 gilt medals
C/E Dept., Runcorn: 5 bronze medals

Individual Averages (10 matches)

1. N. C. Cave (Kynoch C)	97.00*
2. T. Crute (C/E Dept., Runcorn)	96.50
3. F. Massey (Chance and Hunt B)	96.00

* Gilt medal

DIVISION 4

	S	W	D	L	Pts.	Agg.
1. Nylon C	12	12	0	0	24	5558
2. Bradford Area Office	12	8	0	4	16	4846
3. Sheffield Branch Office	12	7	0	5	14	4778
4. Salt Works, Weston Point	12	6	0	6	12	5231
5. Dowlais	12	5	0	7	10	4876
6. Middlesbrough	12	2	0	10	4	4238
7. Nobel-Glasgow	Withdrew from league.					

Awards

Nylon C: 5 gilt medals
Bradford Area Office: 5 bronze medals

Individual Averages (12 matches)

1. W. Taylor (Nylon C)	94.7*
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* Gilt medal

HEAD OFFICE

Work Study "Open Days"

Currently many of the people who bear primary responsibility for Britain's safety and well being are to be found at the "Open Days" held in the Work Study lecture room on the second floor of Imperial Chemical House. Admirals, generals, industrial executives and trade unionists come to hear about the theory and practice of Work Study. After the talks, illustrated by films, diagrams and slides, they discuss the ways in which these techniques for achieving higher productivity can be applied to their own particular enterprises. In this way they are following in the footsteps of the four thousand members of I.C.I., ranging from process workers to divisional board directors, who have learned about Work Study at courses in London and the divisions.

These "Open Days" are a direct result of the reputation which the Company has gained from its success in applying Work Study. Requests for more information about the techniques have at times become so numerous that Sir Ewart Smith, Technical Director, conceived the idea of inviting the leaders of British industry to come and learn for themselves about the progress which the Company has so far made. The wide interest aroused is indicated by the list of the guests who, up to twenty at a time, have so far attended "Open Days." Included are members of the Board of the Admiralty, the Quartermaster General of the Army, and generals from the Ordnance and other corps. Among the civilians present have been senior officials of several important trade unions, the chief scientist of the Ministry of Fuel and Power, and senior civil servants from the Ministries of Education, Supply, and Labour and National Service. Four members of Parliament have also attended. Directors and senior executives of some

forty industrial concerns, as well as leading officials from six nationalised industries, have been present. Representatives of *The Times* and other publications have heard about the latest developments and have joined in the discussions with economists and industrial experts.

These "Open Days" have brought in return much goodwill. The Company's future is inextricably linked to the well being of British industry as a whole. This means that the most valuable return lies in the wider application of I.C.I.'s knowledge of Work Study and the contribution which this can make to national prosperity. Already there are most heartening and tangible results as many well-known companies form Work Study departments of their own or expand their present activities in this field.

Overseas Buyer Retires

A man known personally to a very large number of overseas I.C.I. personnel and by name to a great many more has retired from Central Purchasing Department. He is Mr. Peter McPhail, Buying Manager of the Overseas Supply Service Section.



Mr. Peter McPhail

Mr. McPhail began his career in 1923 with Messrs. Arthur and Hinshaw of Glasgow, who were then the buying agents for the overseas branches of Brunner, Mond and Co. Ltd. Shortly after the formation of I.C.I. this overseas buying was transferred to Central Purchasing Department, and Mr. McPhail, following the trail worn by so many of his compatriots, went to London.

For many years Mr. McPhail has been responsible for I.C.I.'s "venture trading" purchases; under his care a diverse range of materials has been shipped to the overseas companies for resale by them, mainly in support of sales of I.C.I. products.

Mr. McPhail will now have more time to devote to his beloved roses. Indeed, he has already celebrated his retirement by carrying off first prize at a local show.

ALKALI DIVISION

Success at Musical Festival

Mr. Sam Cross, a member of the Engineering Department Inspection Department at Winnington, recently won the Mellor Rose Bowl at the Buxton and North Derbyshire Musical Festival. He was the winner of the bass solo class and was only narrowly defeated for the championship cup. He received his award from the hands of the Duke of Devonshire, who presented the prizes at the festival. Mr. Gordon Thorne was the adjudicator.

A well-known member of the Northwich Musical Society, Mr. Cross has taken many leading roles in their productions, his latest being that of Sergeant Meryll in *The Yeomen of the Guard*. At the Northwich Eisteddfod he has won the bass solo class three years in succession, and he has appeared many times on the concert platform.

BILLINGHAM DIVISION

Family Teams on Works Councils

The recent Works Council elections resulted in success for two family combinations. At Cassel Works (belonging to General Chemicals but represented on Billingham Division Council), two brothers were elected, and at Billingham a father and son were returned unopposed to serve on the council for a further term.



The MacGregor brothers are congratulated by Cassel Works manager on their election to the Works Council

The Cassel Works brothers are Messrs. James and William MacGregor, who joined the Company within six days of each other in 1940. Both are fitters' mates, and both went to Billingham from Glasgow. Mr. James MacGregor, who has already served on the Works Council for four years, is also a shop steward for the National Union of General and Municipal Workers.

At Billingham Mr. R. A. Trotter, a gateman, was returned to the Commercial Works Council, and his son Mr. E. Trotter, a process worker, to the Oil Works Council. Mr. Trotter senior has been a member of his council since 1942. He has been with the Company for 29 years and was promoted to Staff Grade in 1943. He was formerly a shop steward for the Transport and General Workers Union. His 29-year-old son has been with I.C.I. for six years and was appointed a T.G.W.U. shop steward last year.

DYESTUFFS DIVISION

Gala Days

Huddersfield, Grangemouth and Nylon Works held their children's gala days on the last Saturday in June. About 3000 children attended, and Scots and Sassenachs alike, young and old, thoroughly enjoyed themselves.

At Huddersfield the proceedings were heralded by the big drums and trumpets of the Lindley Brass Band, followed by the entrants in the children's fancy dress competition. At Grangemouth their own silver band, after playing selections at the clubhouse, led the procession to the cricket field, where the usual worth-while bag of cakes and sweets and a bottle of lemonade were distributed to each child. Nylon also opened with a fancy-dress parade and the Middlesbrough



Keen contestants in the potato race at Huddersfield Works

silver prize band provided light music throughout the afternoon.

Among the sideshows and games each works had its specialties; at Grangemouth it was a delight to see how the tiniest children played such games as ring-a-roses and "the farmer's in his den" with great abandon to the music of Willie Dougall and his accordion, while the Transport Department's train "Puffing Billy" proved the most popular of Huddersfield's sideshows.

Regent Factory greets the Queen

When the Queen paid her state visit to Scotland in June the Scottish Service of the B.B.C. broadcast greetings to Her Majesty from people in various walks of life in Scotland.



Miss Una Johnstone

To Miss Una Johnstone, a packer in the Penicillin Section of Regent Factory, Linlithgow, fell the great honour of broadcasting a greeting from this royal burgh. This is what she said:

"My name is Una Johnstone, and I work in the Penicillin Section of a pharmaceutical factory in Linlithgow. I help in the production of millions of vials of penicillin every year, and these are sent to all parts of the world. The

penicillin is filled into the vials under special conditions and therefore is free from all germs and safe to be injected into people. After the vials have been tested, labels are gummed on by an automatic machine to identify them. They are then packed into cartons or boxes. I do all these jobs in turn with my workmates, and on their behalf I send from this old royal burgh of Linlithgow that used to be the home of queens loyal greetings to Her Majesty the Queen."

Miss Johnstone, who is 22 years old, has been at Regent Factory for three years. Her part in this historic broadcast is an experience she will remember for many years to come.

Record Goal-scorer

Miss E. M. Knighton of Derby Works Labour Department achieved fame in local hockey circles during the 1952-3 season. Playing at centre forward for Long Eaton Nomads Ladies Hockey Club, she succeeded in finding the net on 45 occasions—the record number of times for women's hockey in Derbyshire.

Miss Knighton started to play for Long Eaton Nomads three years ago, and it seems fitting that she should put up this fine performance in her first season as captain of the team. Her hockey training started at Loughborough High School for Girls, where she won her school colours in 1948.



Miss E. M. Knighton

GENERAL CHEMICALS DIVISION

Death of I.C.I.'s Oldest Pensioner

We announce with regret the death of Mr. Henry Haggin, the oldest pensioned worker of I.C.I. Mr. Haggin was 98, and joined the Allhusen Chemical Company at Gateshead in 1876.

He retired from I.C.I. during the first world war.

Two-pennorth of 'Gammexane'



The photograph above shows the unusual sight of 'Gammexane' insecticide being sold by the ounce in an open-air market. It was taken at Bursa, Turkey, by Mr. K. Rodwell of I.C.I. Film Unit, who was in the country making veterinary films for I.C.(P). The 'Gammexane' is sold for killing fleas, and competes in the market with such different goods as livestock and fruit.

METALS DIVISION

Three Smart Girls

At dog shows in the Midlands two English springer spaniels, Judy and Belinda, are making a name for their owner, Miss Kathleen Howells of the Assembly Department office at Steatite.

Between them this delightful pair have gained three trophies and over a hundred awards, and for the past two years Miss Howells has not come away from any show empty-handed.

Judy is known in show circles as Lickhill Lass and Belinda as Lady Gay of St. Trillos. Envious owners have made tempting offers, especially for Belinda, but without success; enquiries from various parts of the country and one from as far afield as Canada have been received for pups.

NOBEL DIVISION

A Gold Chain for Stevenston

During his last week as Chairman of I.C.I. Mr. John Rogers visited Ayrshire to take part in a ceremony that set the seal on eighty years' happy relations between I.C.I. and the town of Stevenston.

The occasion was the presentation to the Burgh of Stevenston—the youngest burgh in Scotland—of ceremonial robes and chains of office for the provost and magistrates. The provost's gold chain, in the form of 26 gold badges which will bear the names of successive holders of the office, was presented to the burgh by Mr. Rogers on behalf of I.C.I. The gift is recorded in an inscription on the back of the enamelled coat of arms which hangs from the chain.

The public meeting in Ardeer Recreation Club began with a prayer. Provost Morrison then announced his gift of ceremonial robes for the provost and baillies, which would enable them, he said, to be dressed "as braw as other folk." Mrs. W. J. Jenkins, wife of the Nobel Division chairman, was asked to perform the ceremonial robing of the provost and baillies.

Presenting the gold chain to the burgh, Mr. Rogers made a happy speech enlivened with reminiscences of Stevenston



Stevenston's first provost, wearing the chain of office presented by I.C.I., shakes hands with Mr. John Rogers

half a century ago. It was most important for the town, he said, that it should have become a burgh, under the able guidance of his old friend, Provost Morrison. In the 54½ years that had passed since he first came to Stevenston and Ardeer Factory, Mr. Rogers went on, there had been many changes in the old Nobel company and in I.C.I. During all the years of association it had been a great pleasure to the Company that the "dynamite" and the town of Stevenston had always worked very well together.

A lunch which followed the ceremony was attended by representatives of organisations in Stevenston and by officials from neighbouring burghs and the County Council. Toasts were drunk to the Burgh of Stevenston, to I.C.I. and to the guests.

Development Director Retires

Mr. O. R. Lineham, development director of Nobel Division, has retired after nearly 39 years' service. He first joined Nobel's Explosives Co. Ltd. on 1st November, 1914, and almost immediately went to the plant, where his special abilities soon showed themselves. Thereafter for a large part of his career Mr. Lineham was a plant man and a specialist on acids manufacture.

After being the chief superintendent at Acids Department, Ardeer, for some years he was appointed an assistant manager of Ardeer Factory in 1937. When the second world war began his special knowledge was invaluable to the country's effort and he was seconded to the Ministry of Supply. While with the Ministry he was manager of the Royal Ordnance Factory at Bishopton for more than three years. In 1944 he returned from the Ministry to Ardeer Factory, where he became works manager.

This post he held until July of the following year, when he was appointed manager of Operating Department. Some three years later he joined the Nobel Division board as personnel director, and became development director in 1951.

Mr. Lineham is a man of many interests, and in two of his hobbies he is very expert indeed. Photography and gardening have always fascinated him, and in the extra hours which retirement will give him he intends to do much more of this work. Indeed, he is about to practise something he has preached for a long time. It is his theory that retirement is not the end of affairs for a man but the beginning of new interests which could not be fully pursued during working days.

"Time," said Mr. Lineham in reply to a presentation made to him by the staff of the Division, "is important to a retired man, particularly if he has been working hard in his garden."

Ardeer Girl wins Running Championship

Miss Anne McKee, of Ardeer Research Department, added new laurels to her reputation in athletics recently when she



Mr. O. R. Lineham

won the Scottish Women's 440 yards championship at Helenvale.

Miss McKee ran a magnificent race, and with her time of 61.8 seconds knocked $\frac{3}{10}$ second off the existing record, which was set up in 1936.

When she was only 20, in 1951, Miss McKee was chosen to run for Scotland in international events, and her name appears on the internationalists roll in the main entry hall of Ardeer Recreation Club.

PAINTS DIVISION

Golf Clubs travel by Tube

Week-end players at the Temple golf course, near Maidenhead, are often intrigued to see the unusual golf bag shown below.



It belongs to Mr. Philip Naylor, a Division director. Mr. Naylor (who insists that he plays "at golf" rather than "golf") made the bag to save the wear on the grips of clubs which is usually suffered when they are together in a conventional bag. The 'Alkathene' tubes are set in a plywood frame, the whole outfit weighing 11½ lb.

PLASTICS DIVISION

British Visqueen Ltd.

Construction has started at Stevenage, Hertfordshire, of the headquarters and factory of British Visqueen Ltd., the company formed jointly by Imperial Chemical Industries and the Visking Corporation of Chicago, U.S.A., to manufacture polythene film in Britain.

Authorised capital of British Visqueen Ltd. is £240,000 in £1 shares. Two-thirds will be held by I.C.I. and one-third by Visking.

The chairman of British Visqueen Ltd. will be Mr. J. C. Swallow, chairman of Plastics Division, and the managing director will be Mr. N. J. Travis, who is at present on the staff of Plastics Division; other directors are Mr. A. F. Gawler, Mr. H. C. Raine and Dr. J. E. Sisson (all of Plastics Division)

and Mr. F. C. Howard and Mr. A. T. Peterson (for the Visking Corporation).

Polythene was discovered in I.C.I. laboratories in 1933 and I.C.I. has pioneered its manufacture in film form in Great Britain. Polythene film is transparent, tough, inert, moisture- and water-proof and is used for packaging many commodities, including foodstuffs, pharmaceuticals, chemicals, electrical and metal components, textiles and machinery.

The Visking Corporation was formed in 1925 to manufacture seamless transparent tubes from regenerated cellulose. During the war, at the request of the U.S. Government, the Corporation developed a process for manufacturing unsupported packaging film from polythene. Today Visking are the world's largest producers of polythene film.

C.A.C.

Mr. Robertson appointed to Research Institute

The Ministry of Agriculture and Fisheries has nominated Mr. T. Ainslie Robertson, chairman of Plant Protection Ltd., first chairman of the new Glasshouse Crops Research Institute. The governing body of the Institute is composed of equal numbers of scientists and practical growers, and Mr. Robertson will have the benefit of Fernhurst, Plant Protection's experimental station, in integrating the views of all concerned.

Mr. Robertson has been chairman of Plant Protection since 1944, and he was managing director for seven years before that. His connection with I.C.I. goes back to the days when he came down from Oxford and became secretary to Sir John Brunner. Later he joined the family business of Alex Robertson & Sons, which eventually became part of Cooper, McDougall and Robertson Ltd. Mr. Robertson was their managing director in South Africa from 1925 to 1934, and on his return to this country took an active part in the negotiations for the formation of Plant Protection Ltd.

I.C.I. (HOLLAND)

I.C.I.'s Most Exclusive Magazine

Now in its second year of publication, the house magazine of I.C.I. (Holland) can probably claim to be the most exclusive magazine in I.C.I. Its circulation amounts to only 120 copies, which is the total number of employees in the Dutch company.

The magazine, called *Impkemix* (after the Company's telegraphic address), runs to some twenty duplicated pages inside a printed cover. It is issued monthly, and the contents include stories, humorous articles, poems, technical notes on I.C.I. products and accounts of recreation club activities. Some of the items are in English, but this is no obstacle to the Dutch readers, nearly all of whom speak both languages fluently.



Impkemix is edited by Messrs. A. Fluks and R. Kleefkens and Miss J. van Oosten.

I.C. (PHARMACEUTICALS) LTD.

The Omukama of Bunyoro

In June I.C.(P) was honoured by a visit from the Omukama of Bunyoro, Tito Gafabusa Winyi IV, C.B.E., the hereditary ruler of Bunyoro, one of about half a dozen sovereign states in the Uganda Protectorate. He was an official guest at the Coronation and was accompanied by his wife, the Omuga of Bunyoro, and by Saza Chief E. R. Muchwa. The Saza Chief is a senior chief and head of a county.

During his visit to I.C.(P) the Omukama lunched with Mr. P. A. Smith, afterwards visiting Publicity Department to see a showing of the film *The Story of 'Antrycide.'*

The Omukama was in the United Kingdom in 1948 on an official visit arranged by the Colonial Office and the British Council and was accompanied by his prime minister (or katikiro). During his visit on that occasion he was received by the Lord Mayors of Manchester, Liverpool and Cardiff and was entertained by Lord Hartington, now the Duke of Devonshire. He visited Manchester from 23rd to 27th May, 1948.

THE REGIONS

Farm Demonstration

Some 1000 farmers attended a demonstration near Winchester recently on the growing of corn crops under conditions of liberal dressings of nitrogen.

The demonstration, staged by Southern Region, was a striking example of how large quantities of sulphate of ammonia or 'Nitro-Chalk' are used today when the new stiffer-straw varieties of wheat and oats are grown. In one particular field the huge quantity of 7 cwt. to the acre of 'Nitro Chalk' or its equivalent was applied. "The owner of this farm, Mr. John Rowsell," said Mr. R. A. Hamilton of C.A.C. when addressing the conference, "was at this rate doubtless qualifying for a seat on the I.C.I. Board."



A convoy of farmers survey a field of oats during Southern Region's farm demonstration

Scottish Athletes' Successes

Two members of the Glasgow Area office of the Scotland and Northern Ireland Region have recently scored notable athletic successes.

Miss Eileen Sealey, a short-hand-typist in the Area Metals Department, beat an Olympic runner, Miss Pat Devine, in the 220 yards at Glasgow. Miss Sealey, described by the *Scottish Daily Mail* as a slim, stylish mover, has only come to the fore this season; it was a little over a year ago that she joined the Maryhill Harriers and took up sprinting seriously. During the winter she plays hockey for the "Former Pupils" team of Hillhead High School.



Mr. K. St. C. Cunningham

Mr. K. St. C. Cunningham, a chemicals representative in the Glasgow Area, won the Scottish Amateur Athletic Association high jump at Edinburgh with a height of 6 ft. 1 in. Last year he came second, and the year before third. His friends hope that if he stays true to form next year Mr. Cunningham will be breaking records.

Secretary appointed Guide Commissioner

The secretary to the Shrewsbury Area Manager, Miss A. J. Roberts, has been appointed a district commissioner of the Shropshire Girl Guides Association. She also holds the position of assistant county secretary.

Miss Roberts has been a Guide since the age of 11. She finds time out of office hours not only for her guiding activities but also to be secretary of the office social club and a keen member of the Swimming Section.

★ ★ ★

OUR NEXT ISSUE

Sir Wallace Akers, who retired from the Company at the end of April, has written the leading article for our September *Magazine*. For many years Sir Wallace has been particularly interested in the fostering of research at the universities by means of research fellowships. There are today 92 of these research fellowships spread over 11 universities and paid for by I.C.I. They cost the Company over £70,000 a year, and Sir Wallace explains the purpose of all this.

Our next two articles are both concerned with the home. One—the colour feature—deals with "doing the flowers," and explains, with some lovely illustrations, the principles underlying the art of flower arrangement. The other is about old silver. Mr. C. S. Jagger puts his finger on a curious phenomenon of our age, viz. that owing to purchase tax it is often cheaper to buy antique Victorian silver than the modern plated article. He deals with some of the intricacies of buying silver and gives valuable advice on the pitfalls to be avoided and the points to go for.

Lastly, Mrs. Mollie Fraser of Nobel Division contributes an article which will warm the hearts of all amateur dramatic enthusiasts. It is called "Curtain Up!"

BALINESE DANCE

By A. E. Ward

Illustrated by Whitear



Being the story of the monkey dance, as described in the diary of a visit to Bali in 1936.

DURING my stay on the island of Bali (off Java) in 1936, I was invited to what is known as "the Monkey Dance."

It was 7.30 and very dark when we arrived and there were about a dozen spectators of the white races and hundreds of natives. A bench or two for seats were placed quite close for us white people. The dance was staged under a banyan tree on the spot where the natives gather at all times for gossip, argument and especially for cockfighting, which is almost the national game of Bali—or sport, if you prefer that—and for anything else which affects the village life.

The banyan tree is deemed sacred, no doubt because it grows to such enormous proportions as to give shade from the sun to all the village gatherings; and in such heat the shade is necessary. I have sat under a banyan tree which could easily give cover to 1500 people.

Now try to picture in your mind the scene I am doing my best to describe. The night was dark and very hot, no

moon, but a clear starlit sky as no English night can give. The banyan tree with its enormous branches blotted out the stars where it loomed upwards into the sky, and in the centre of the open space beneath was placed an old iron or bronze brazier, burning coconut oil in four cups which shed a curious dim light but which after one's eyes had become accustomed to it (as at a cinema) enabled one to distinguish 200 shining brown bodies of native men sitting or squatting as Eastern people do, in this case in spiral circles which were regulated by stone blocks 6 inches wide placed end on end level with the surface of the ground, being a permanent fixture ready at all times for the dance.

All around were silhouettes of coconut palms, banana trees, a solitary kapok tree and other trees and palms, the leaves of all quivering and vibrating, the sound of their movement being as the rustling of the wings of migrating birds flying overhead.

Bats—big fellows—flew about snapping up night insects which were attracted by the flares of the coconut oil. Large

black butterflies, which might be blue in the daylight, flapped and floated to and fro; an occasional firefly twinkled its brilliant light; and from all around out of the thick vegetation came the chirrup of cicadas and crickets and the deep hum of a myriad faint noises and calls of night birds.

It was a scene which did not belong to the world I knew and my words cannot possibly convey to your mind the unearthly and fairy-story feelings which took possession of me. I cannot remember that I thought about anything really. I ceased to be myself.

At the head of this living spiral of 200 natives sat the leader, and all were silent and motionless as statues, their bodies reflecting a brown glow.

Suddenly from the dark forest on our right came the beating of a solitary tom-tom or drum, slow, deliberate and provoking, and the 200 squatting men all stiffened in the same fraction of a second, each listening intently until it stopped.

Then silence, and after some seconds from the left out of the darkness of the forest boomed the answer, which was defiant and challenging. Again the drums on the right replied and again defiance came from the left, both in turn, time after time, the one challenging, the other defying, always slow; but what a challenge and what a response! There was no mistaking the message of the drums—it was to be war, and pitiless war.

The drums ceased and there was silence everywhere—everywhere except for the sounds of the night life of the forest, and even these seemed to make the silence more silent.

Out of the circle of the brown bodies there came a moan, a cry, a wail, anything you choose to call it, from the leader as he began to chant. By and by he rocked himself forward with both hands stretched out as if to ward off some impending evil, and like a thunderclap from the 200 throats of the chorus came the same chant and with the same gestures in perfect time, all still and squatting on the bare ground.

The tune changed, the movements and gestures changed; sometimes 400 hands and arms shot up into the air in a packed mass with fingers quivering and vibrating.

Sometimes the leader swayed to the right and sometimes to the left, and the swaying travelled along the spiral until it reached the end, like the rippling of a wave or the fall of a pack of cards.

After a time all the performers were worked up into an ecstasy; but the chanting went on, the leader sometimes alone with responses from the others.

Then out of the darkness into the dim circle of light round the brazier bounded the athletic figure of a splendid man, his brown body garbed below the waist in a sarong of many colours and another, also of rich colours, which blended with the sarong, draped round his body, but leaving his arms bare. His head-dress glittered and sparkled as if fireflies had been used to adorn it.



... a hundred / the performers sprang upright with shaking hands and quivering fingers

The motions of his hands and arms, the ripples which ran from his fingers along the arms and shoulders, down past the waist and bent knees to his feet, were wonderful. He chanted his story as he danced in the magic circle and in time sat down. The leader began a new chant and again took up the tale and another warrior came out of the darkness similarly garbed, told his tale and also sat down, panting and a little out of breath owing to the heat and with the exertion of his dancing.

Followed a little lady attired in rich colours, from her glittering head-dress down to the hem of her sarong, from under which peeped her little brown feet.

Again everything was hushed until the leader began a chant, and the first movement of the dance and the first note of the chant were at the same instant. She circled the brazier lights with such delicate movements of arms, body and legs as is not possible to describe, and there were most fascinating little movements of the head which by jerks or twitches turned to left or right ever so slightly but so delightful to watch.

When the little lady was about at an end one of the two warriors sprang up and began to dance to her and she to him, and after a time she retired. The two warriors

then sprang to their feet threatening each other as they gyrated round and round the circle of light and again sat down.

After that a hundred of the performers sprang upright as one man, in a compact mass, with both arms stretched out as with shaking hands and quivering fingers they menaced the other hundred, who, at the moment they had jumped up, lay back flat on the ground, exhibiting signs of terror and making chattering and other noises such as monkeys might. They in turn sprang to their feet and threatened the others, who now lay backwards on the ground squirming and shivering. This was repeated several times and appeared to mean the monkeys of the forest were taking a hand and assisting one side or the other in the struggle.

Finally for some minutes the whole chorus of 200 chanted what might be a song of victory, then it stopped as suddenly as it had begun and all was silent except for the noises of the forest and the hum of insects. Up above were the twinkling lamps of the fireflies and in the flickering lights of the brazier the bats were still hunting their food, while below quite motionless were the perspiring brown bodies of the performers.

And so ended the dance, which had lasted more than an hour.

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There was a sequel to the dance.

The Dutch girl, Jetje, sat with me on the bench out of gratitude at persuading her mother to allow her to come. At the end of the performance the lovely little Balinese dancer stole up and stood in all her finery in front of Jetje, very shyly proffering her hand.

The dumb appeal in her eyes gave one pause. Jetje slid off her seat, and without hesitation both children, each about 8 years old, walked off into the darkness, each clasping each round the waist.

The mother and I followed, but all the children desired was to be away from the crowd of natives.

When the car came the Balinese maiden began to cry and Jetje, still holding her, clasped her tighter and wept too.

And the mother of Jetje also had a good cry as we set off and waved goodbye, then—would you believe it—the mother turned to me quite fiercely and almost shouted:

“And your Rudyard Kipling says never shall the East meet the West!”



Logging in Cumberland

Photo by A. Walker (Birmingham Division)